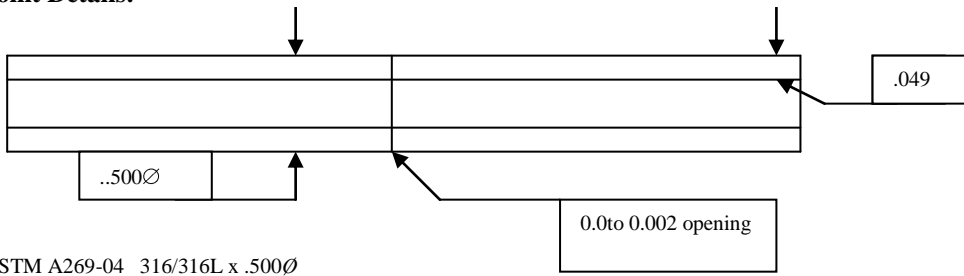


Welding Procedure Specification

180-210

Welding Procedure Specification No.: <i>WPS AMI/Orbital 003</i>			Date: 12/29/2009
Revision No.:	Revision Date:	Remarks:	Supporting PQR No.(s): PQR AMI/Orbital 003
Welding Processes:	<i>GTAW/Automatic</i>	(2)	
(Manual, Automatic, Machine, Semi-automatic)			

Joints (QW-402):			
Joint Design: Groove	Backing: Gas	Backing Material (Type): Argon Gas	Remainder: Deposited Material
Retainer: *** No	Type: Non-Metallic *** Metallic (Non-fusing)		
Joint Details:			
 <p>ASTM A269-04 316/316L x .500Ø AMI Orbital Welding Machine (Autogenous only)</p>			

Base Metals (QW403):	S-No.: 8 Group 1	TO	S-No.: 8 Group 1
Specification Type and Grade: <i>ASTM A269-04 316/316L</i>			
TO Specification Type and Grade: <i>ASTM A269-04 316/316L</i>			
OR Chemical Analysis and Mechanical Properties:			
TO Chemical Analysis and Mechanical properties:			
Thickness Range:	Process 1		Process 2
Base Metal:	Groove: .049	Fillet: <i>Unlimited</i>	Groove: Fillet:
Deposited Weld Metal:	Groove: .049	Fillet: <i>Unlimited</i>	Groove: Fillet:
Pipe Diameter Range:	Groove: .500 Minimum	Fillet: <i>Unlimited</i>	Groove: Fillet:
Other:			

Filler Metals (QW-404)	Process 1		Process 2	
Specification No. (SFA):	Autogenous – No Filler			
AWS No, (Class):				
F-No.:				
A No.:	8			
Size of Filler Metals:				
Deposited Weld Metal Thickness Range:	Groove:	Fillet: Unlimited	Groove:	Fillet:
Electrode-Flux (Class):				
Flux Trade Name:				
Consumable Insert:				
Other:				

Each Base Metal-Filler Metal Combination should be recorded individually .

Welding Procedure Specification

BACK AMI/Orbital WPS-003

Positions (QW-405)		Post Heat Treatment (QW-407)	
Positions of Groove:	<i>All</i>	Temperature Range:	<i>None</i>
Welding Progression	<i>Upward & downward</i>	Time Range	<i>N/A</i>
Positions of Fillet	<i>All</i>		

Preheat (QW-408)		Gas (QW-408)			
Preheat Temperature:	<i>Minimum 50 °F</i>			% Composition	
Interpass Temperature:	<i>Maximum-Not Recorded</i>		Gases	Mixture	Flow Rate
Preheat Maintenance:	<i>None</i>	Shielding	<i>Argon</i>	<i>99.9%</i>	<i>10-15 CFH</i>
Minimum Welding Temperature	<i>32 °F</i>	Trailing	<i>None</i>	<i>***</i>	<i>***</i>
		Backing	<i>Argon</i>	<i>99.9%</i>	<i>8-12 CFH</i>

Electrical Characteristics (QW-409)				
Current – AC or DC:	<i>Direct Current</i>	Polarity: <i>Straight</i>	Characteristics	<i>Pulsing</i>
Tungsten Electrode:	Size: <i>.040Ø</i>	<i>EWCe-2</i>		
Mode of Metal Transfer for GMAW:	<i>N/A</i>			
Electrode Wire Feed Speed Range:	<i>N/A</i>			

Technique (QW-410)	
String or Weave Bead:	<i>String</i>
Orifice or Gas Cup Size:	<i>AMI Orbital Head 9-500</i>
Initial Interpass Cleaning (Brushing, Grinding, etc.):	<i>Initial Solvent Clean***Wire brush between passes</i>
Method of Back Gouging:	<i>None</i>
Oscillation:	<i>None</i>
Contact Tube to Work Distance:	<i>N/A</i>
Multiple or Single Pass (per side):	<i>Single</i>
Multiple or Single Electrode(s):	<i>Single</i>
Travel Speed (Range):	<i>As Required</i>
Peening:	<i>None</i>
Other:	

Sequence Chart : AMI Orbital Model 227 STD2.1 with Model 9-500 Weld Head .049" x .500" Ø (ASTM A 269-04)									
Weld Levels	Pulse	Rotation	RPM		Time	AMPS		PULSE	
			Primary	Back		Primary	Back	Primary	Back
<i>1</i>	<i>ON</i>	<i>Continuous</i>	<i>1.00</i>	<i>--</i>	<i>122</i>	<i>38</i>	<i>5</i>	<i>.22</i>	<i>.20</i>

Manual GTAW Tacking of assembly optional by qualified welder.

Use pre-shaped and pre-sized factory supplied tungsten